

Figures

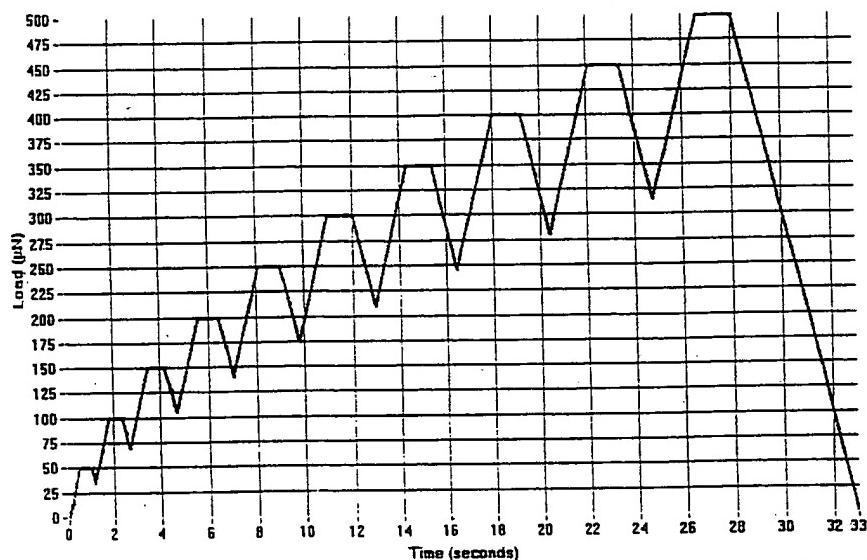
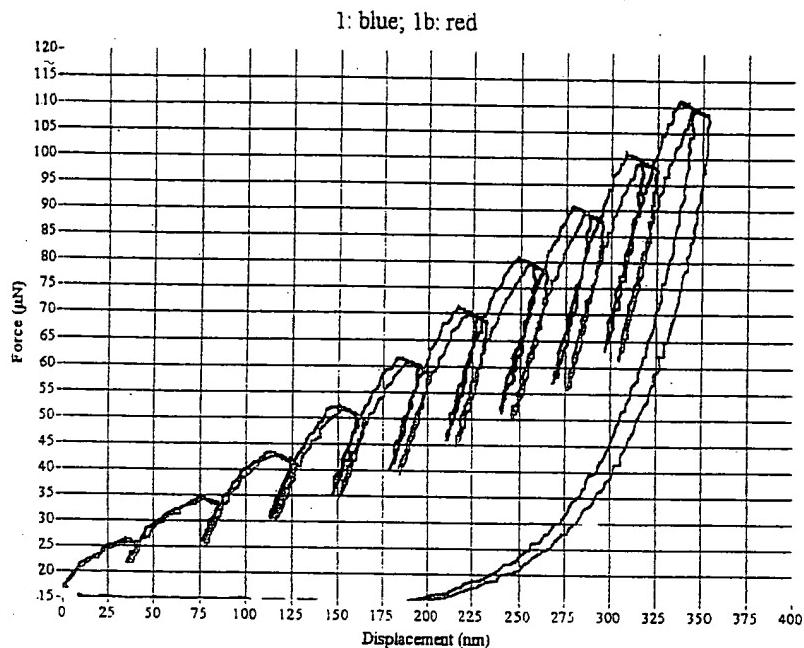


Figure 1. Typical Load-Function used for the indentation Experiments

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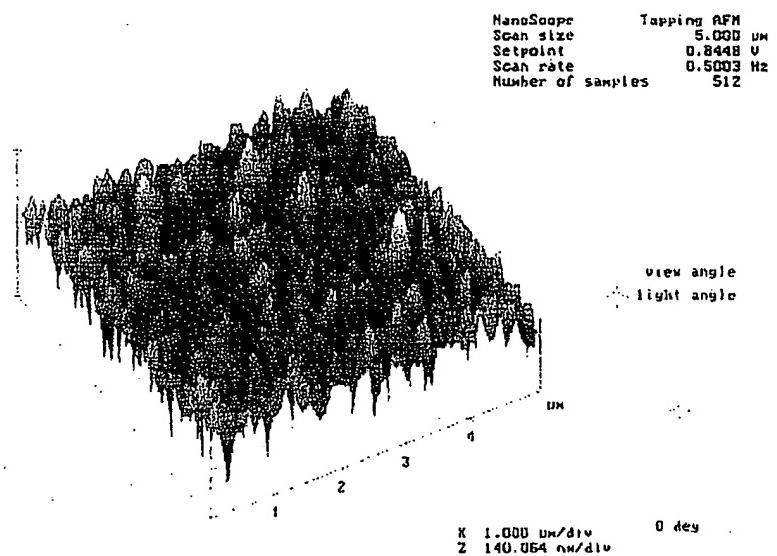
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**Figure 2.** Typical force displacement curves for 2 comparative experiments of non - surface structured (flat) coating of formulation F showing good experimental reproducibility between the two curves.



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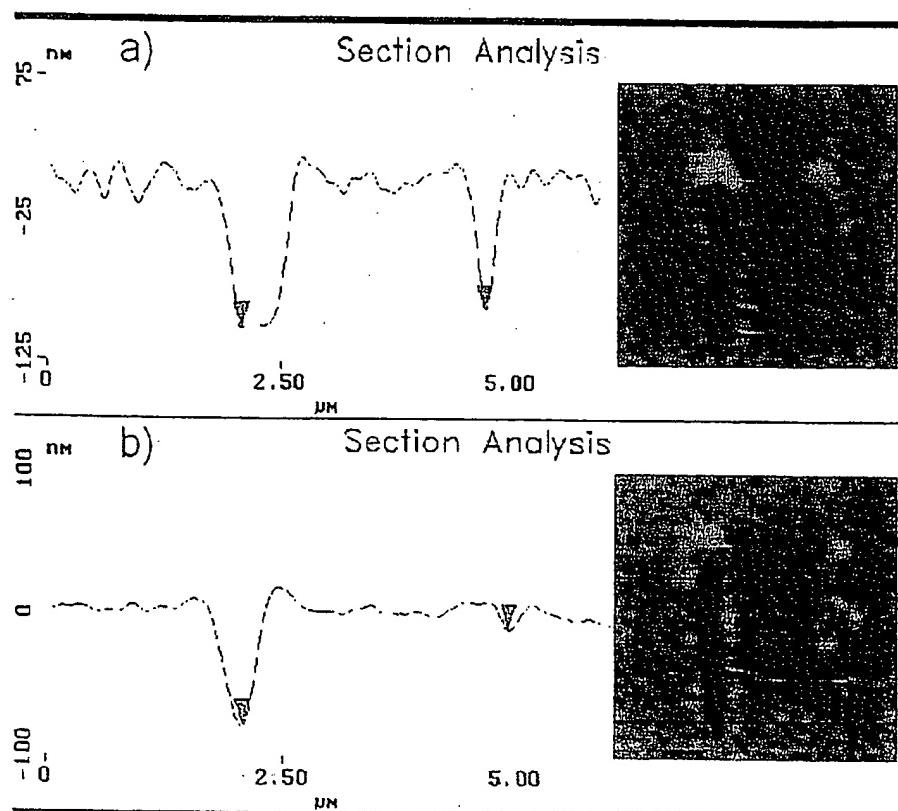
Figure 3. AFM Image of nano-structured coating of Example formulation 1, showing



the surface nano-structure (ridges and troughs). Height resolution is 100nm.

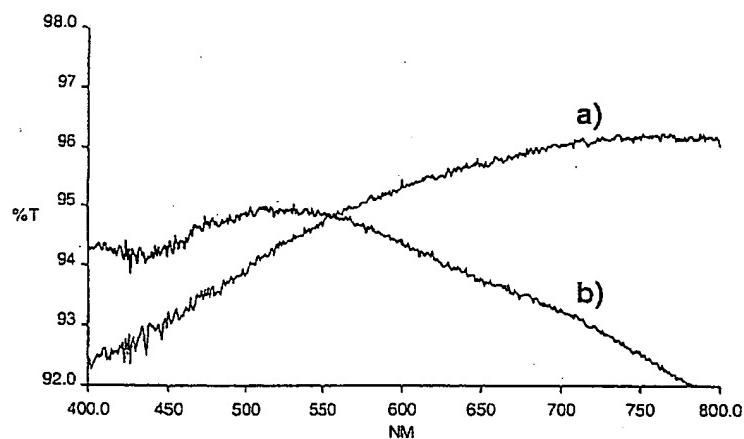
**Figure 4.** AFM image showing influence of silane adhesion promoter on scratch resistance. **a)** cross-section of the scratch at 20 and 50 mN of hard coat post baked without silane adhesion promoter (example formulation 3). **b)** cross-section of the scratch at 20 and 50 mN of hard coat post baked plus silane adhesion promoter, (example formulation 2).

These AFM images clearly show that the addition of silane adhesion promoter and thermal post-baking increase the scratch resistance of the nano-structured coating.

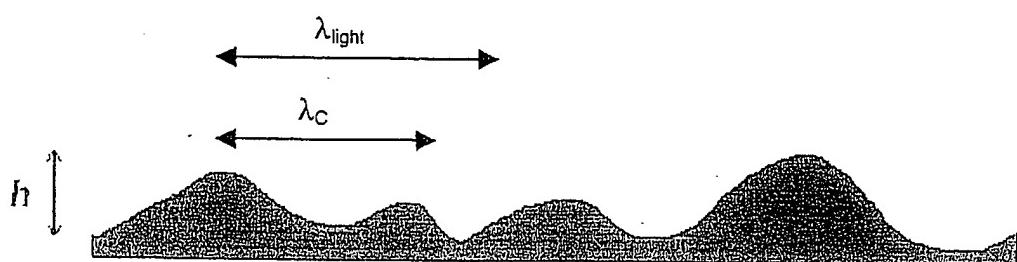


**Figure 5.** Visible transmission spectra of glass slide with and without nano-structured coating. a) glass slide with nano-structured coating of Example formulation 1, b) uncoated glass microscope slide.

The transmission spectra clearly show the increased transmission (anti-reflective performance) of the surface structured hard coating with respect to that of the substrate (glass).



**Figure 6.** Schematic representation of a typical nano-structured surface, showing the average height of the ridges ( $h$ ), the average lateral spacing between ridges ( $\lambda_c$ ) and a typical wavelength of visible light ( $\lambda_{light}$ ).



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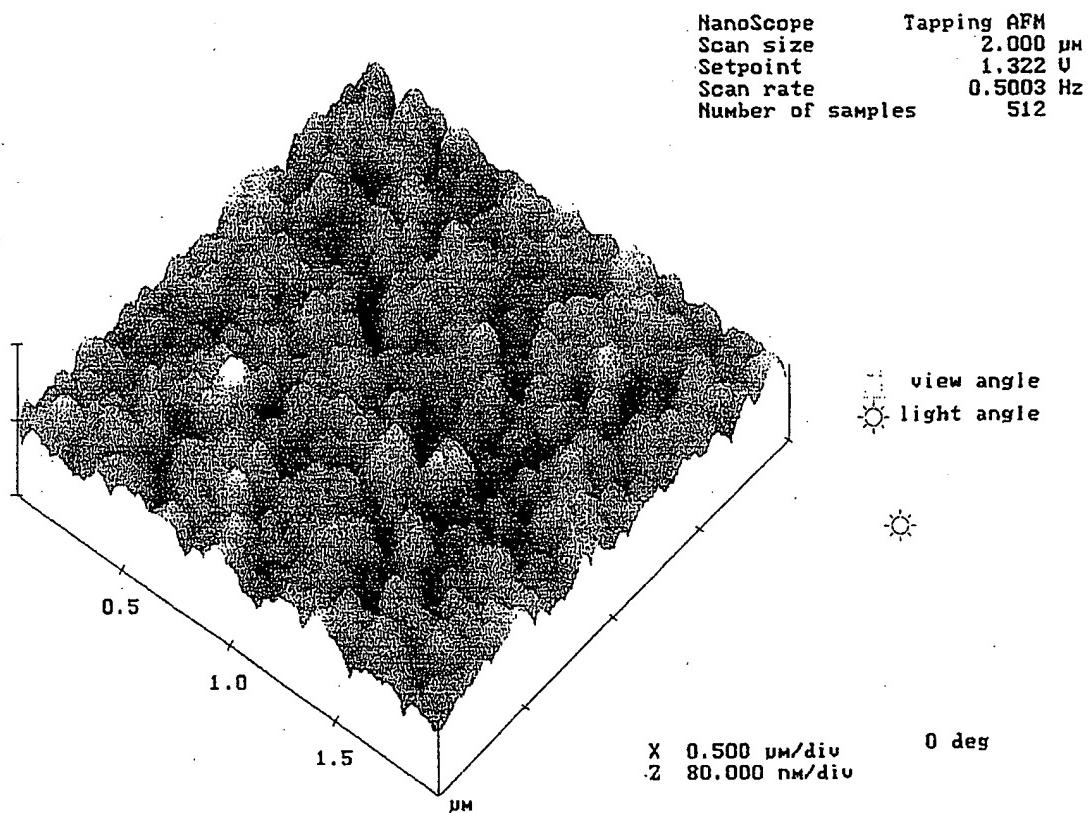


Figure 7: AFM measurement of the surface of a washed coating of formulation 4.

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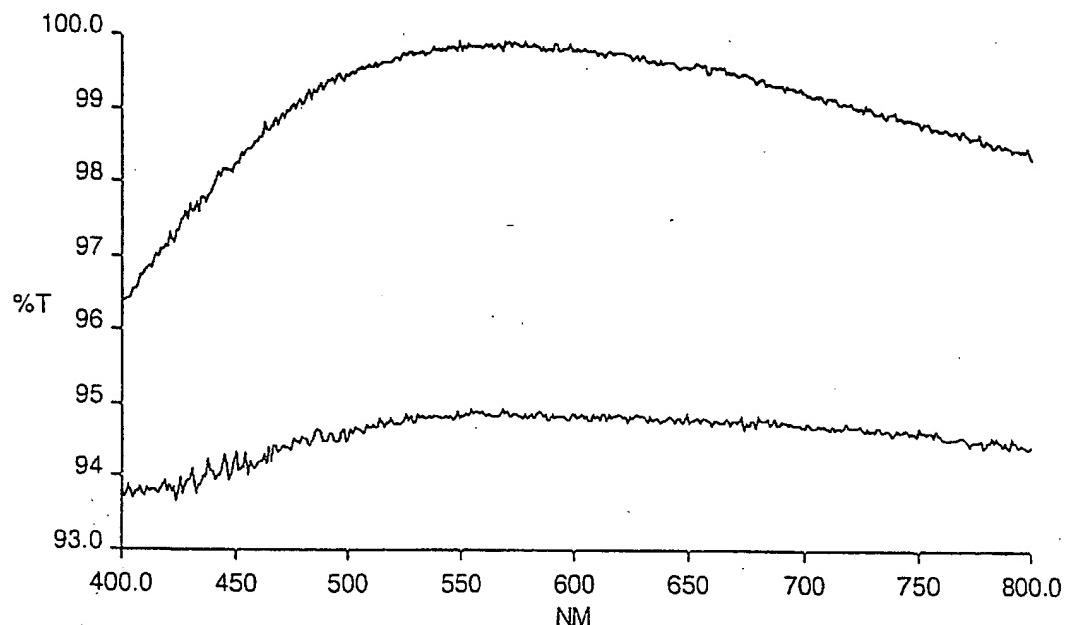
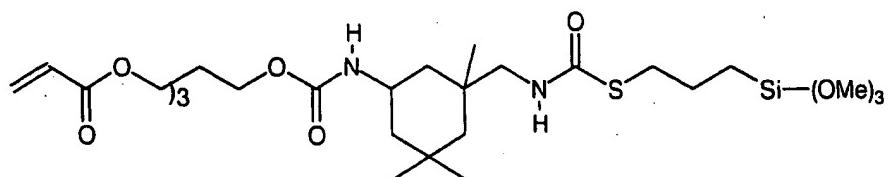


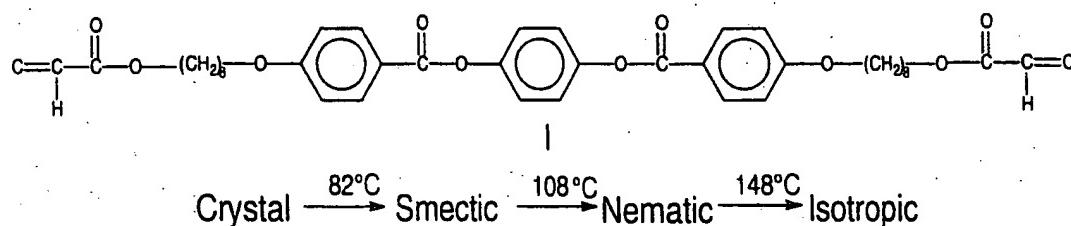
Figure 8: UV spectrum of glass slide with/without coating with topology: glass slide (lower curve), glass slide with nano-structured film (upper curve)

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Formula 2: Int-12A



Formula 3: Liquid crystalline diacrylate



Crystal  $\xrightarrow{82^\circ\text{C}}$  Smectic  $\xrightarrow{108^\circ\text{C}}$  Nematic  $\xrightarrow{148^\circ\text{C}}$  Isotropic